Sediment and Water Quality Assessment in the Conasauga River Basin

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Biographical Sketch of Presenting Author
Adam Sharpe is a graduate student in the natural resources program at North Carolina State University. The focus of his program is in hydrology. Adam's undergraduate degree is from the State University of New York at Cortland, from which he received a degree in biology with a concentration in secondary education. After graduation from SUNY Cortland, Adam taught high school biology, chemistry, and earth science for three years before returning to graduate school. Adam's role in this research project involves the production of the sampling design, sampling protocols, as well as the quality control/quality assurance plans for the research. His role also includes carrying out the sample collection, processing, and analysis.

Abstract
Recent biological inventory data shows a consistent decline in molluscan abundance and biodiversity in the Conasauga River Basin in Northwest GA. The river is impacted by various land uses that include row crop, livestock operations, urban impacts, recreational human uses, and transportation corridors. Preliminary toxicity screening using Vibrio fischeri and the Flash Luminescent Assay indicates acute toxicity of river sediments, particularly at low flow events. One time sampling may not always capture the full impact due to various meteorological events and changing land use patterns. Planned activities include seasonal, monthly, and diurnal sampling of targeted sites in the Conasauga watershed. Analysis of sites will involve traditional biological and chemical characterization of water and sediments. In addition, target sites will be monitored by stable isotope ratio analysis (IRMS), passive sampling devices (PSD), and polar organic chemical integrative samplers (POCIS). PSDs will be used as time integrative samplers to screen for particular monitor hydrophobic organic contaminants in the water. Analysis of sediment and mollusks by IRMS should indicate sources of nitrogen inputs into the river system. POCIS will be used to monitor polar chemicals known to cause acute toxicities in aquatic environments. Sampling will span a twelve-month period, and the data collected will used to determine potential factors responsible for the declines in mollusk biodiversity, abundance, and survival.